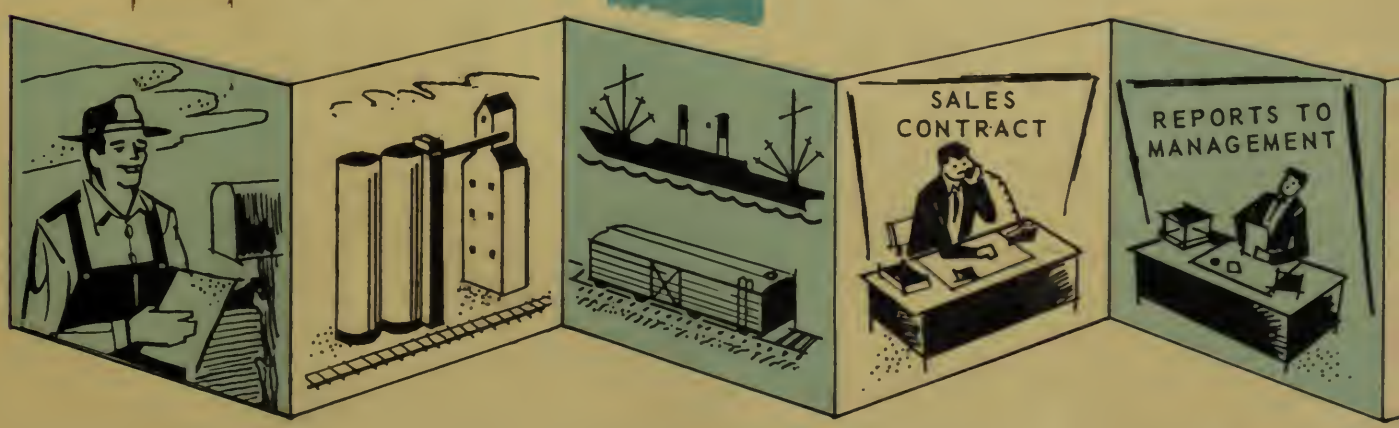
Progress Report on OPERATIONS IMPROVEMENT Through AUTOMATION 1955-1960



Commodity Stabilization Service

U.S. DEPARTMENT OF AGRICULTURE

FOREWORD

This is a report on machines and how they have helped CSS improve its efficiency. We are proud of that efficiency. We are proud too of the rather amazing things some of the machines do. But we cannot justifiably give machines a major share of credit. Credit for CSS's efficiency - including that achieved through machines - must properly be given CSS employees who - at all levels - have created the ideas, developed and designed the systems, programmed the machines, and efficiently operated them. No machine will yet do what a person has not told it to do.

Our management emphasis in CSS will continue to be upon our most important resource - people. Therefore in behalf of CSS management, congratulations to those employees who have been involved in the projects included in this report.

Administrator

PROGRESS REPORT ON OPERATIONS IMPROVEMENT THROUGH AUTOMATION

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THE CSS EFFORT AT OPERATIONS IMPROVEMENT THROUGH AUTOMATION

This is a story of one agency's effort at operations improvement. Since it is largely concerned with automatic data processing experience, it is not the whole story. The whole story cannot readily be told in a few pages. But it would consist of our efforts during the past few years to improve program operations in a wide variety of ways.

In these efforts, we have had considerable help. We have been helped within the Commodity Stabilization Service by the hard work and support of the people who work for the Service in Washington and in the field, division, area, and commodity office directors, State and county committeemen and women, supervisors, fieldmen, clerks.

We have been helped outside CSS by the Office of the Secretary and his staff offices, by agencies in the executive and legislative branches, by people on farms and ranches whom we serve, and by people in the several trade and industry groups with whom we work in the execution of laws and programs assigned to CSS.

These efforts at improvement have ranged from suggested legislation revision, internal agency instruction codification and simplification, broadened personnel training, improved accounting and records procedures, to the greater use of mechanical equipment in the conduct of our work.

This is the story of mechanization in Commodity Stabilization Service.

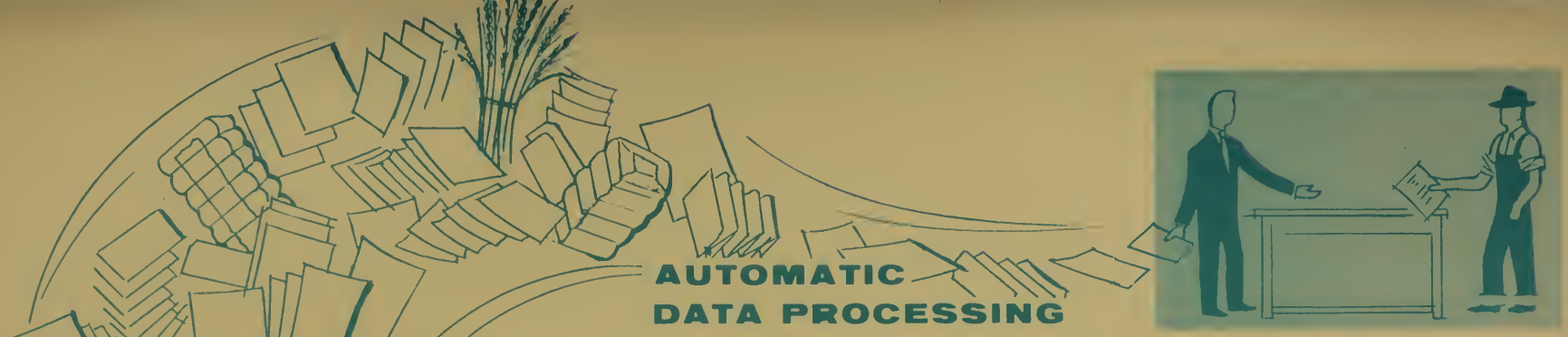
Electric accounting machines using punched cards have been used in administering action programs of the Department for nearly twenty years. By 1955 it became evident that agency ability to obtain greater use of this conventional equipment in its day-to-day operations had reached a peak. Moreover, the workload outlook had increased to the point where an exploration of alternative management and operating systems was necessary in order to meet program demands in a timely and economical fashion. Thus, after fifteen years of valuable experience with conventional punch card equipment, the agency turned to the computer as one of several means to accomplish the ends of improved operations. In so doing, attention was also given to ways in which conventional equipment could be optimized.

All of this work was conducted under a project control system which, while coordinated at Washington, was carried out largely in the field closest to the points where the physical work is performed. Some 82 separate projects have been undertaken during the past five years. Some of these projects have been of a high degree of agency-wide significance. Others have been significant only to the office concerned. All of them have been of value directly and indirectly, and have enabled both the office and the agency to continue its progress towards operations improvement. They have also laid the foundation for further progress in the years ahead.

These projects have fallen logically into several categories of operations analysis which reflect the breadth of view taken toward improving our operations. These categories include forms examination and re-design, source document processing and transmission, data extraction and reporting, all with a view of maximizing the use of the scarce resources of CSS to perform an increasingly larger job through the wise use of modern equipment -- ADP.

What follows, then, is a story of growth and development in automatic data processing. It is a record of modest accomplishment in which the employees of CSS can be proud. It is also indicative of the greater possibilities for service to American agriculture in the years ahead.

Andrew J. Mair
Deputy Administrator, Operations



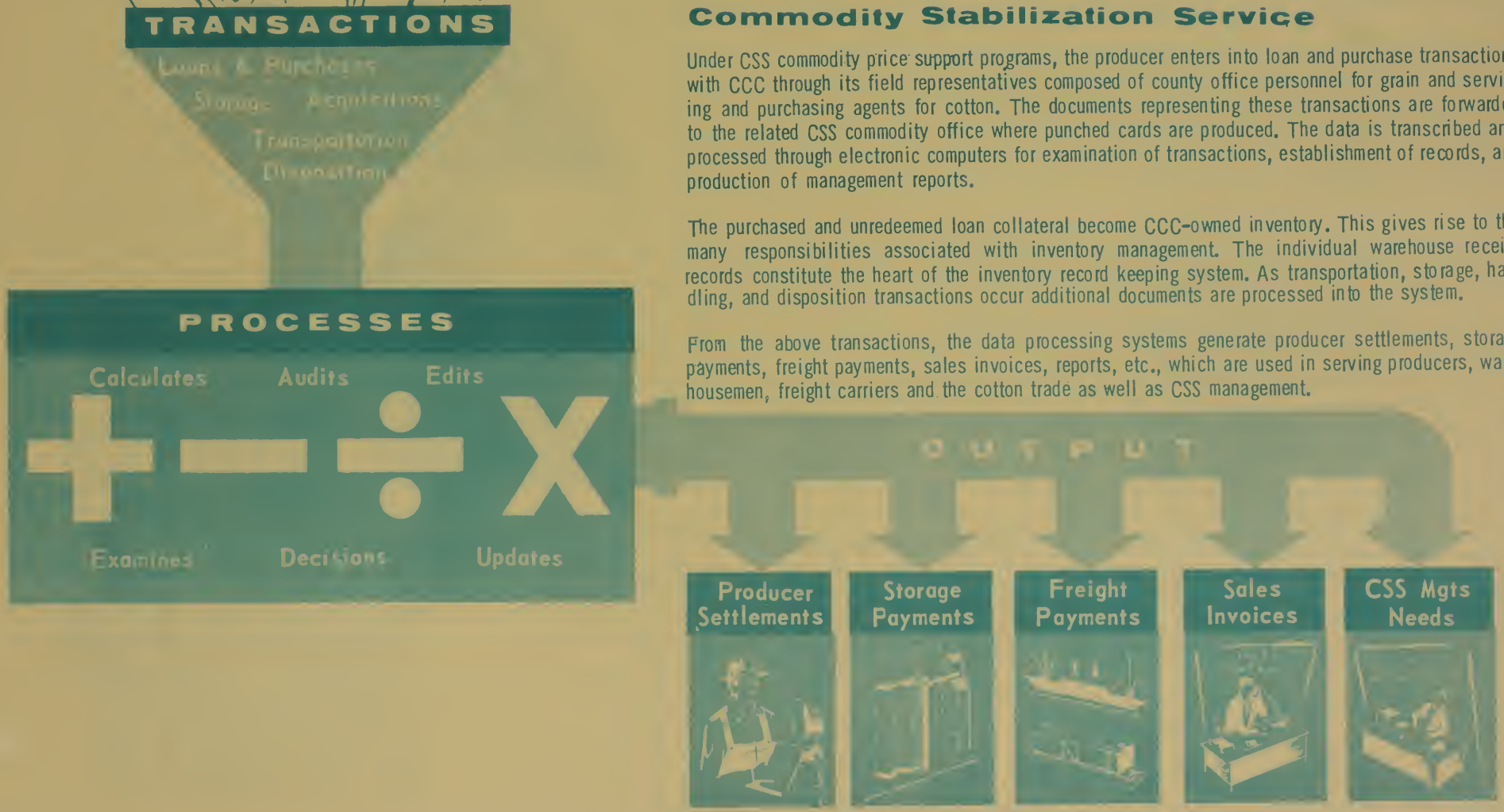
AUTOMATIC DATA PROCESSING

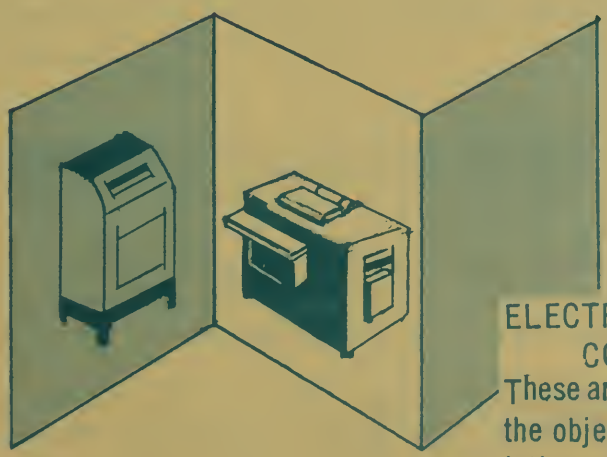
Commodity Stabilization Service

Under CSS commodity price support programs, the producer enters into loan and purchase transactions with CCC through its field representatives composed of county office personnel for grain and servicing and purchasing agents for cotton. The documents representing these transactions are forwarded to the related CSS commodity office where punched cards are produced. The data is transcribed and processed through electronic computers for examination of transactions, establishment of records, and production of management reports.

The purchased and unredeemed loan collateral become CCC-owned inventory. This gives rise to the many responsibilities associated with inventory management. The individual warehouse receipt records constitute the heart of the inventory record keeping system. As transportation, storage, handling, and disposition transactions occur additional documents are processed into the system.

From the above transactions, the data processing systems generate producer settlements, storage payments, freight payments, sales invoices, reports, etc., which are used in serving producers, warehousemen, freight carriers and the cotton trade as well as CSS management.





II A
ELECTRIC ACCOUNTING MACHINES CONVERSION PROJECTS

These are automation projects wherein the objective is to convert from an existing mechanized data processing system utilizing electric accounting machines (EAM) to a system utilizing EAM or electro-mechanical equipment of larger or newer types so as to obtain greater machine capacity and/or faster processing speeds.

IMPROVED ACCOUNTING MACHINE SYSTEMS
(Commenced January 1956 - Completed September 1957)

To obtain more information for management while improving the processing of data, the CINCINNATI, DALLAS, KANSAS CITY and PORTLAND COMMODITY OFFICES replaced their IBM Model 402 accounting machines with more modern IBM Model 407 machines. To insure maximum benefits from the new equipment, the related paperwork systems were redesigned.

The new equipment permits the arrangement and processing of data in ways not possible except with multiple passes through the earlier equipment. Punched cards used as input to the 402 would not have utilized these features. Report formats for use with the 402 did not have provision for the additional data to be provided by the 407. Accordingly, both punched card and report formats were redesigned for use with the 407.

Preceding the redesign of cards and report formats, a study of the timing of reports and the information management wanted was made resulting in more timely and better information for management.

The new equipment and improved records and reports have resulted in the capability of more quickly producing reports with the data arranged in any one of a variety of ways. Management calls on this capability for reports tailored towards reaching a specific decision.

ADDITIONAL ELECTRONIC CALCULATING NEEDS
(Commenced January 1956 - Unfinished)

To determine its electronic calculating needs, the MINNEAPOLIS COMMODITY OFFICE has periodically reviewed anticipated office workload and its relationship to available equipment.

Initially, the International Business Machines (IBM) 602A Punch Card Calculator was able to hold only a few of the several rates needed to figure the price of any lot of grain. Therefore, it was necessary to process information about the quality and kind of grain delivered through the machine several times to get a price for each lot of grain. Each rate is based on a separate grain quality or grade factor. Thus, only a few price factors could be calculated in one pass through the calculator. The calculator had to be reloaded with other rates to be matched to different quality factors in subsequent runs.

The newer IBM Model 607-5 was able to hold all but one rate factor at one time. It was therefore usually possible to match all grain quality factors to the appropriate rate and compute the price in one pass through the IBM Model 607-5. The results were faster processing of sales, loading order settlement data, and periodic payments for warehouse charges thereby permitting earlier settlements with CCC's customers. In addition, increased capacity allowed certain manual operations to be placed on the new equipment making for more efficient operations.

Increased workload and planned additional applications after a year's experience would have exceeded the machine's available time. Therefore, new or additional equipment was needed if the additional applications were to be automated. Three controlling factors governed the consideration of new equipment: (1) availability for delivery, (2) expanded machine capacity, and (3) adaptability to existing punched card operation.

It was determined that an IBM Model 607-2 electronic calculator with additional storage would meet the office's immediate needs. Authority was granted to order the new equipment and it was installed in October 1957.

Equipment capacity was increased by 45% while the time required to process existing operations was greatly reduced. The manufacturer recently declared the 607-2 obsolete and announced a new series of transistorized equipment. Study by the Minneapolis Office revealed that the new IBM Model 609 electronic calculator provided larger storage capacity and operated at faster speeds while being substantially lower in rental rates. Consequently, the office contracted for the installation of the Model 609.

PREPARATION OF PUNCHED PAPER TAPE INPUT MEDIA UTILIZING BURROUGHS SENSIMATIC EQUIPMENT

(Commenced October 1959 - Completed June 1960)

To determine if transcribing data from documents directly into punched paper tape rather than into punched cards for later transfer to punched tape would improve certain price support operations, the MINNEAPOLIS COMMODITY OFFICE at the request of Washington conducted a test utilizing Burroughs Sensimatic Equipment.

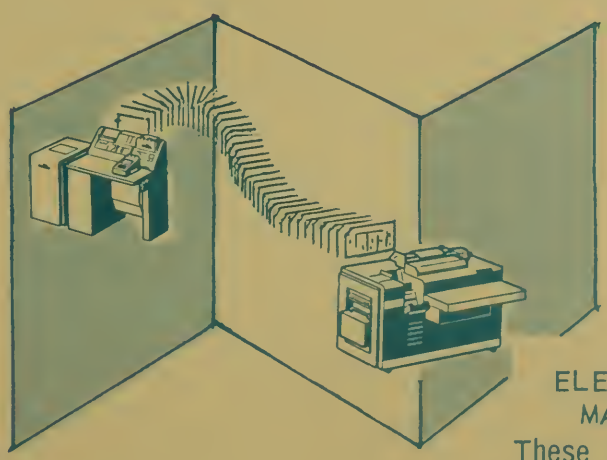
The objects of the study were to determine (1) possible cost benefits, (2) ease of operation and equipment flexibility and capacity and (3) equipment efficiency.

The existing system provided for transcription of data from source documents into punched cards through key punching and key verification of the data. The key punched cards were then proof listed on an International Business Machine Model 407 accounting machine for verification to predetermined control totals. Once proven they were converted to paper tape for mailing to the data processing center.

The proposed method would have eliminated key punching cards. Instead paper tape would have been punched on the sensimatic equipment while at the same time preparing a proof listing. The need for using the more expensive 407 accounting machine would have been eliminated.

The results of the test indicated that for this application the presence of the alpha-numerical data as well as the requirements of the present data transmission system made the sensimatic equipment less effective than present equipment.

Experience gained from this test will be helpful in future consideration of applications that might make better use of similar equipment.



II B

ELECTRIC ACCOUNTING MACHINE SYSTEMS

These are automation projects wherein a total data processing system is developed that utilizes EAM machines and techniques. It does not include EDP equipment.

CONTROL AND RECORDATION OF WAREHOUSE EXAMINATIONS
(Commenced January 1956 - Completed June 1956)

To simplify the recordation of results of warehouse examinations and to present statistical information about them in a better manner, the PORTLAND COMMODITY OFFICE developed a system for key-punching the original data into punched cards and producing reports from them automatically.

Previously, data had been recorded and tabulated manually. The data were in turn copied onto plastiplates by typewriter for offset printing.

By keying the data into punched cards it was possible to prepare the plastiplates on an electric accounting machine from punched cards fed into the accounting machine.

The mechanical preparation of plastiplates reduces reproduction time. The accuracy of the reports has improved and tedious manual sorting of data and reports and tabulation of data has been eliminated as a result of utilizing punched cards and automatic reproduction of reports.

MECHANIZATION OF WOOL BID SALES

(Commenced January 1956 - Completed June 1956)

To provide quicker more accurate processing of sales resulting from bids on lots of wool, the BOSTON COMMODITY OFFICE mechanized the preparation of reports, delivery orders and certain accounting records.

In the bid and sale procedure, it was necessary to arrange bids by grade and class. Before the systems change, the bids were arranged manually with data extracted directly from the bids. By means of the automated system, sales data are punched into cards. It was possible then to mechanically arrange the cards into any of a number of subject matter groups; grade, class, bidders and so on. With this capability delivery orders, catalogues, reports and various accounting records could be prepared mechanically.

The substitution of mechanical for manual preparation of these documents permitted faster more timely processing of sales and sales data while reducing the incidence of human error. No additional equipment costs accrued to the agency since the equipment was already available.

MACHINE PREPARATION OF REPORT "CHANGES IN CCC INVENTORY"

(Commenced January 1956 - Completed September 1956)

To make possible the machine preparation of the report "Changes in CCC Inventory", (Form CCC-3) the FISCAL DIVISION developed a continuous multiple copy form for preparation on an IBM 407 accounting machine.

Previously, this report had been prepared manually on a typewriter. The basic information from which the report is prepared is maintained on punched cards.

Under the new method, a continuous machine form has been developed and put into use. The punched card processes have been extended to machine prepare this report as a by-product of the record keeping system.

As a result, the manual typing and proof-adding has been eliminated thereby reducing the cost and increasing the efficiency with which the report is prepared.

PRECOMPUTATION OF PERIODIC PAYMENTS
(Commenced January 1956 - Completed December 1956)

To improve the method of paying warehousemen for storage charges accruing to CCC-owned commodities, the EVANSTON, MINNEAPOLIS and PORTLAND COMMODITY OFFICES devised a system for periodically preparing precomputed invoices for later verification and certification by warehousemen prior to payment.

The system used in one office had required commodity office preparation of listings of quantities of grain stored in each warehouse. The completed listing was forwarded to the warehouseman who determined the number of days the grain had been stored and the cost of such storage. The calculated storage charges were then returned to the commodity office for complete audit prior to disbursement. The other two offices relied on somewhat similar systems.

Now, however, data on the listings are machine extended, storage charges computed, and a complete invoice is prepared in the commodity office, and mailed to the warehouseman for verification and certification. The warehouseman makes any changes he deems appropriate, signs the invoice and returns it to the commodity office for payment. The commodity office audits the changes made by the warehouseman prior to disbursement.

The new system has resulted in earlier payment of storage charges due warehousemen. Procedures have been greatly simplified in commodity offices. One office reports savings of $12,000 in the first year of operation of the new system. Another office estimated their savings at $4,000 in the first year.

MACHINE PREPARATION OF "REPORT OF CCC LOANS"
(Commenced January 1956 - Completed September 1956)

To utilize the concepts of an integrated system, the FISCAL DIVISION developed a continuous multiple copy form for preparation of the "Report of CCC Loans" by an IBM 407 accounting machine.

The report previously had been prepared on a typewriter. The typewritten report had been prepared from a pencil draft made from machine listings. The report data was then manually added to locate transcription and typing errors.

The new method utilizes a continuous machine form developed by the Fiscal Division. Summary cards are mechanically produced as a by-product of the preparation of the machine listings. The final report is prepared directly from the summary cards by the IBM 407 accounting machine.

The benefits of this project are: the manual typing and proof-adding have been eliminated; the machine prepared report is less expensive to prepare than the manually prepared report; it permits simpler presentation of non-standard data; it is more timely and easy to handle.

MECHANICAL PREPARATION OF WAREHOUSE NOTICES TO DELIVER

(Commenced January 1956 - Completed December 1957)

To determine the feasibility of machine preparation of the Warehouse Notice to Deliver, the CINCINNATI COMMODITY OFFICE conducted a systems study.

Warehouse lot listings of processed commodities are machine prepared from the inventory punched card system. Lots to be delivered out of storage are selected from the listing and Warehouse Notices to Deliver are prepared manually on a typewriter.

Tests were conducted for the machine preparation of the Notice to Deliver utilizing the punched cards which were the basis for preparing the merchandising listings.

The commodity office's study concluded that it was not economically feasible to machine prepare the Warehouse Notice to Deliver.

EXPANDED LOADING ORDER AVERAGING AND FASTER COMPUTATIONS

(Commenced January 1956 - Completed March 1957)

To speed averaging and computation of loading order charges, the MINNEAPOLIS COMMODITY OFFICE studied the feasibility of adapting them to its International Business Machines Corporation (IBM) type 607 electronic calculator.

Previous loading order averaging was converted to the IBM type 607 from the IBM type 602A which had been released. It was proposed to expand the averaging processes on the IBM type 607 to take into account additional grading factors and defects in loading order averaging.

Extensive study revealed that, while it was possible to expand the mechanization of the averaging, it was not considered to be economically feasible since each loading order would have to be handled separately. The project was, therefore, discontinued.

STORAGE AVAILABILITY AND INVENTORY MANAGEMENT REPORTS
(Commenced January 1956 - Completed March 1958)

To provide management and operating officials with current information about commodities in inventory, and available storage, the PORTLAND COMMODITY OFFICE developed a means for preparing more complete data at an earlier time from warehouse receipts and trusts.

The previous system had in part relied upon manual preparation of reports as a by-product of accounting controls. Report formats were not tailored to emphasize the specific needs of management. The data, while sufficiently timely and descriptive for accounting control, did not supply data when it was needed for management and operating decisions.

One of the first steps towards providing better reports was to ascertain what data management needed. A next step was to determine headings under which the data should be presented. New report formats tailored to satisfy these needs were designed. Reporting intervals and due dates were determined too.

An International Business Machines' type 407 accounting machine was utilized to prepare the desired reports.

The new reports have fulfilled their expected role. Management is supplied with current information about available storage and stocks, their location, grade and class and is thereby able to make decisions based on current data rather than data that may be old and incomplete.

STANDARDIZATION OF PUNCH CARD FORMAT FOR SUBSIDIARY ACCOUNTS

(Commenced January 1956 - Completed March 1958)

To increase machine utilization and efficiency, key punching accuracy and speed, the DALLAS COMMODITY OFFICE undertook to standardize punched card format and related internal procedures for subsidiary accounts.

Existing subsidiary accounts had been maintained in accordance with at least five different sets of instructions providing for several different punched card formats. Single use forms and documents necessitated the use of several sets of plugboards and control panels for the Electric Accounting Machine Equipment (EAM).

A single card format and punching guide has been issued along with the necessary internal procedures. A standard form for listing certain subsidiary accounts has been developed and issued.

The new system facilitates preparation of registers by reducing the number of control panels required. Key punch operations have been accelerated by the standardization of card formats with common information in like fields. Generally, increased efficiency, flexibility, and simplification have been derived from standardized punched card formats.

MECHANIZATION OF TRANSIT TONNAGE
(Commenced January 1956 - Completed September, 1958)

To obtain better control of transit tonnage, better records and reports and more effective utilization of manpower, the MINNEAPOLIS, PORTLAND, KANSAS CITY, and DALLAS COMMODITY OFFICES mechanized recording,controlling and reporting of transit tonnage.

The previous manual system had not provided a means for knowing whether a transit tonnage detail record had been lost. The system had relied upon time consuming comparison of supporting documents and validation of entries. It had resulted in voluminous files and occasional lags in the establishment of tonnage records.

The new system was built around recording transit tonnage into punched cards as the tonnage became available. To ease the work involved in recording transit acquired on forfeited loan grain, a uniform supplemental certificate, to evidence acquisition of transit, was adopted and issued for the use of cooperating warehousemen.

Once the tonnage had been recorded into punched cards, machine selection, or manual selection from card tub files, became possible. Machine prepared listings of transit by age and location also became possible with the adoption of punched cards. They made possible too, control of the inventory of transit tonnage by permitting machine comparison of transit on hand with that received and that disposed of.

Cost savings resulting from the new system have been estimated at up to $30,000 annually, mostly from savings in man hours previously required for accounting for transit tonnage.

MECHANICAL PREPARATION OF REINSPECTION REQUESTS
(Commenced January 1956 - Completed June 1959)

To eliminate manual listing of lots to be reinspected, the CINCINNATI COMMODITY OFFICE conducted a systems study to integrate this operation into their punched card system.

Previously, identifying information for lots of processed commodities requiring reinspection was extracted from machine prepared listings and manually listed on a reinspection request form.

The new system provides for the mechanical preparation of the reinspection requests from the office's master inventory record. Also, the reinspection instructions have been incorporated into the lot listing so that a single reinspection request form now carries the information previously requiring two forms.

The result has been a more efficient and timely operation from introducing the by-product preparation of the requests from controlled records, the elimination of a manual transcription of data when typing the requests under the previous system, and the elimination of proof reading of the manually typed requests.

STANDARDIZATION OF GRAIN POSITION INVENTORY PUNCH CARD FORMAT
(Commenced January 1956 - Consolidated)

To develop a more efficient and accurate means of coding, punching and verifying punched cards for all grain inventory position sub-accounts, the PORTLAND COMMODITY OFFICE designed standard formats for the sub-account punched cards.

Each commodity office had developed its own formats as they had adapted their inventory record keeping systems to punched cards and later modified them. Since the exchange of sub-account information in machinable form was difficult, it was decided to study the possible standardization of the formats of the inventory sub-account punched cards. The Portland Office was assigned responsibility for conducting the initial study.

When proposed standard formats had been prepared, they were circulated to the other commodity offices and to Washington divisions for review and comment. In the meantime, the commitment of the grain price support program to an automatic data processing system utilizing data processing centers made uniform collateral cards mandatory.

After the comments had been evaluated in Washington, standardized collateral punched cards were adopted for the 1958 price support program. Further effort in development of the inventory sub-account cards has been made part of the agency's national grain inventory management project.

As a direct result of the Portland Commodity Office's effort, the standardized collateral cards have, as expected, resulted in quicker transcription and interpretation of data in the price support system. Punched cards prepared in one office fit without adjustment into the system at the data processing center for handling through machine processes.

CHECK OR CCC SIGHT DRAFT PREPARATION IN CSS COMMODITY OFFICES

(Commenced April 1956 - Completed September 1958)

To lessen the cost of preparing sight drafts, the MINNEAPOLIS COMMODITY OFFICE developed a system for mechanically preparing them in commodity offices rather than in Federal Reserve Banks. National implementation of the system was to be accomplished through the FISCAL DIVISION in Washington.

Each commodity office had manually prepared block and disbursement vouchers and submitted manually prepared schedules of disbursement to the Federal Reserve Bank (FRB) for preparation and disbursement of Treasury checks to the payee. The FRB was reimbursed by CCC for administrative costs.

Under the new system, punched card sight drafts are issued by commodity offices against the regular capital fund account of CCC. Sight drafts are prepared where practicable, on an electric accounting machine as a by-product of the data processing system. Drafts are signed for the directors of the commodity offices on a check signing machine. The system also provides for issuance of drafts on a typewriter when the source data are not available in the system for machine preparation.

This system was effected by Handbooks 48-FI, Federal Reserve Bank Handbook, and 49-FI, CCC Sight Draft Disbursements by Commodity Offices.

Annual savings have been estimated at $18,000 for the Minneapolis Commodity Office and $100,000 nationally.

MONTHLY COMPUTATIONS OF WAREHOUSE ACCRUALS
(Commenced April 1956 - Completed March 1958)

To provide a more accurate and efficient monthly computation of warehouse accruals, the MINNEAPOLIS COMMODITY OFFICE instituted computation of warehouse accruals from punched cards prepared for periodic invoices.

Under the previous system, manual posting and maintenance of the warehouse accrual inventory ledgers were necessary. The current procedure provides for posting from periodic payment summary cards prepared at the end of each quarter.

In addition to a financial savings of approximately $2,000, annually, this system provides a more efficient method of accruing warehouse charges and determining their accuracy. The new system also permits faster determination of the number of open loading orders and unpaid periodic invoices outstanding at a given time.

MACHINE PREPARED INVENTORY POSITION LISTINGS FOR SECTION 32 COMMODITIES PLACED IN STORAGE

(Commenced January 1957 - Completed June 1957)

To simplify the maintenance of inventory records, the CINCINNATI COMMODITY OFFICE developed an automated system compatible with an existing inventory record keeping system for CCC-owned capital fund commodities.

Records to account for commodities maintained under Section 32 were being processed manually. The new system permitted utilization of existing electric accounting machine equipment in a manner similar to that for maintaining grain commodities. Inventory position listings were developed and used and vendor code listings were converted to mechanical processes.

In addition, by entering inventory information on punched cards, mechanical preparation of Warehouse Examination Registers became feasible. The punched cards also permit more effective control for audit purposes.

The new system for Section 32 inventories promoted smoother administration of the total inventory management problem by bringing all inventory under one management system.

VERIFICATION OF FREIGHT CHARGES
(Commenced July 1957 - Deferred)

To develop a system for mechanical computation and verification of freight charges, the PORTLAND COMMODITY OFFICE studied Electric Accounting Machine (EAM) Equipment that might accomplish this function, while possibly eliminating the need for the existing car book posting system.

In the present system, a set of rate cards is visually checked for proper rates used for computation, verification, preparation of schedules of disbursement, and posting in the car book. All of these operations are manual.

It is proposed to produce a punched card for each car lot shipment, and to punch freight rate cards to allow the existing EAM equipment to mechanically compute and verify freight charges. As a by-product of the mechanization, a punched card would be obtained containing the car record, thereby eliminating the manually posted car book.

Due to office workload, the project was dropped after a preliminary study. The manually posted car book was replaced by punched cards as a result of another project.

LOADING ORDER SETTLEMENTS
(Commenced July 1957 - Unfinished)

To further mechanize on punched card equipment the loading order settlement operations, the MINNEAPOLIS and PORTLAND COMMODITY OFFICES undertook a review of their respective systems.

Minneapolis Commodity Office:
In the Minneapolis Office, a portion of the processing of loading orders had been accomplished mechanically. However, most of the work was completed manually. The policing of compliance with loading orders, application of loading orders, quality adjustments, transit settlements, and computation of warehouse charges were all manual operations.

Several changes have now been adopted. Procedures for the mechanical car application to terminal loading order settlement, mechanical computation of charges on country loading orders, mechanization of quality premium and discount accounting, mechanical computation of charges on terminal loading orders and mechanical pricing for all commodities have been completed and installed.

Portland Commodity Office:
In Portland, the manual method of loading order settlements was replaced with a mechanized system. Operating procedures were mechanized for country loading order issuance; recordation of bills of lading; control, review and follow-up of unfilled orders; and quality and quantity settlements. A savings of $32,000 was estimated for 1959.

Procedures were revised also for recording grain shipments to provide for keypunching information from track arrival notices for shipments consigned to inspection and diversion points. The railroads include the loading order number and waybill data for cars arriving at inspection and diversion points (I & D). It is now possible to keypunch notices for I & D shipments from track arrival information. This enables the office to include destination or disposition data when the shipment is recorded.

The addition of the destination elevator code has made it possible to maintain cards by destination location. Cards are mechanically sorted and merged daily to speed up matching flow cards to warehouse receipts. This system permits aging and listing by elevator location for policing for warehouse

receipts. Destination information is used to record freight to the applicable country or terminal cost classification. The manual posting of bills of lading and diversion information has been replaced with a car record punched card file.

Manual posting of bills of lading to a shipment control has been replaced with a daily machine listing of shipments recorded. Recording disposition information permits maintaining a file of reproduced cards for shipment applied to sales.

ANALYSIS OF FLOUR AND CORNMEAL CONTRACT BIDS
(Commended November 1959 - Completed February 1960)

To provide a faster and more economical analysis of bids for flour and cornmeal purchase contracts, the CINCINNATI COMMODITY OFFICE mechanized the sequencing of the bid data.

Previously, sequencing of bids for flour and cornmeal processing contracts was performed manually in the Grain Division in Washington. As the bids are received, it is necessary to list them in a sequence based on such data as: item number, destination, quantity and amount of bid, thereby facilitating the analysis of the bids prior to awarding contracts. Due to a substantial increase in program volume for such contracts it became desirable to look for faster means of processing the bid data.

The Cincinnati Commodity Office developed an efficient system to mechanize and speed the processing of this data utilizing existing punch card equipment. After opening the bids, the data are transcribed into punched cards and sequenced. Separate machine listings are prepared on such factors as item number, lowest bidder, and second lowest bidder and related delivery limitations. These lists assist the marketing specialist in his analysis of bids in awarding the purchase contracts at the price most advantageous to the government.

The new system has resulted in faster processing of the data and acceptance of bids as well as reducing the number of man-hours necessary to accomplish this operation.

DEVELOPMENT OF A PROPOSED SYSTEM TO TRANSMIT DATA FROM PORTS

(Commenced January 1958 - Completed December 1958)

To speed receipt of inventory data, the DALLAS COMMODITY OFFICE studied the use of data transmission systems for notification of transfers between commodity offices and for port activity reports.

The existing method of data transmission relies upon typewritten reports mailed between commodity offices and port activities.

It was proposed to utilize electric typewriters outfitted to produce punched paper tape. The paper tape was to be transmitted over Teletypewriters (TWX) to the receiving office. The typed report would be mailed for later verification of the tape as necessary. The paper tape subsequently would be passed through a tape to card converter to create punched cards for existing mechanized record keeping.

The project was abandoned due to the decrease in port activities resulting from the payment-in-kind program obviating the necessity for rapid data transmission.

USE OF ADDRESSOGRAPH EQUIPMENT
(Commenced January 1958 - Completed June 1960)

To speed envelope addressing and entering of repetitive data on forms, over 1650 ASC COUNTY OFFICES have been equipped with addressograph equipment.

Each year millions of envelopes were manually addressed to farmers. Millions of forms with repetitive data were similarly prepared for ACP cost sharing, notices of Acreage Allotments, price support and similar matters.

By use of the new equipment, address plates for farmers print rapidly their name and addresses on envelopes. Other plates are used to print the repetitive data on forms. Many man hours of tedious work have been saved both in typing and proof reading. Faster more efficient service to producers has become possible. The cost of the equipment will be more than recovered over its estimated useful life.

EXTENSION OF GRAIN PROCEDURES FOR PAYMENTS TO WAREHOUSEMEN TO INCLUDE BEANS AND RICE

(Commenced April 1959 - Unfinished)

To further improve the method for making periodic payments to warehousemen, the PORTLAND COMMODITY OFFICE extended procedures which had been developed for grain to include beans and rice.

Prior to this change, bean warehousemen manually computed their warehouse charges and submitted a monthly invoice to CCC for approval and payment. Under the new system, quarterly invoices for periodic warehouse charges for beans are mechanically computed and mailed to the warehouseman for verification and signature. The invoice then is returned to the commodity office for payment.

The new system simplifies commodity office procedures and results in faster payments to warehousemen.

Efforts to include rice have been consolidated with the national grain inventory project.

COMPUTATION OF TERMINAL SALES INVOICES

(Commenced January 1956 - Completed June 1956)

To improve the method for computing terminal sales invoices, the MINNEAPOLIS COMMODITY OFFICE initiated a study to determine the feasibility of using its IBM Model 607 Electronic Card Calculator for this activity. However, before any progress was made on the project, a program change was made which resulted in the discontinuance of export sales activity in this office. Consequently, the project was discontinued.

PREPARATION OF PUNCHED CARDS FOR DEFENSE PLANNING PURPOSES

(Commenced July 1959 - Unfinished)

To provide information needed for defense mobilization and post attack planning at all levels, the FOOD AND MATERIALS DIVISION is developing a punched card system for identifying and locating all major food processing, storing and distributing facilities in the United States.

This is the first system to provide basic information such as name and address of facility, capacity and production, and other data essential to the defense planning effort. The data are obtained from special field surveys or as by-products of various records maintained in the Department of Agriculture.

Thus far, the following industries have been committed to the system:

	Type of Industry	Number of Facilities
1.	Bakers Yeast Plants	17
2.	Macaroni Products Plants	226
3.	Wet Corn Milling Industry	16
4.	Flour Milling Industry	630
5.	Dry Corn Milling Industry	138
6.	Rice Milling Industry	79
7.	Commercial Elevator Storage	15,044
8.	CCC Bin Sites	3,992
9.	Brewing Industry	240
10.	Peanut Butter Plants	154
11.	Margarine Plants	67
12.	Auction Stock Yards	590
13.	Terminal Stock Yards	58
14.	Livestock Slaughtering & Processing Plants	1,309
15.	Beet Sugar Factories	63
16.	Cane Sugar Mills	106
17.	Cane Sugar Refiners	30
18.	Distribution of Primary Sugar Stocks	534
19.	Industrial Molasses Storage Facilities	82
20.	Fruit Dehydrators & Packers	119
21.	Vegetable Driers & Starch Manufacturers	58
22.	Naval Stores Facilities	91
23.	Tobacco Manufacturing Industry	219
	Total	23,862

Inmediate plans are in process to add to the new system 14 more industries with an estimated 25,000 facilities.

In the operation alert exercise of May 1960, for the first time, a complete set of interpreted punched cards and machine prepared listings of all of the above facilities was available at the following locations:

1. Office of Civil Defense Mobilization (OCDM) Relocation Center

2. U.S.D.A. Relocation Center

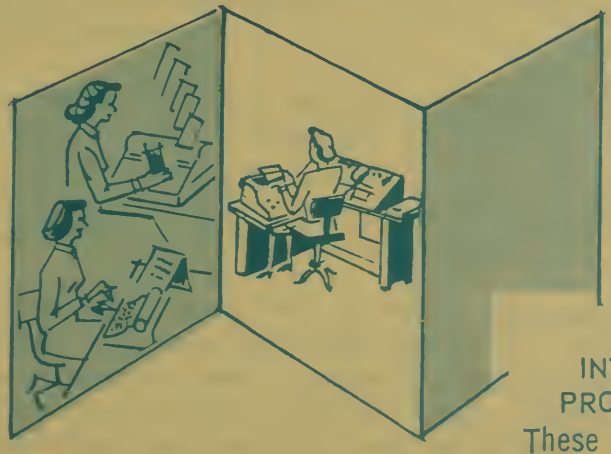
3. U.S.D.A. Regional Liaison Representative Offices

4. U.S.D.A. State Offices

5. U.S.D.A. County Offices

This made possible a complete damage assessment of the facilities based on a simulated attack pattern and the preparation of estimates to show the post-attack supply and availability of food in this country.

These data are also being utilized, as applicable, to improve the regular operating and research program of the Department.



III
INTEGRATED DATA PROCESSING SYSTEMS

These are automation projects where two or more separate operations within a data processing system are integrated into a single operation to produce the same products with less effort.

Immediately after installing the system, a large movement of grain was made from terminal elevators in a relatively short period of time. The new system handled the inventory movement data quickly and easily with no increase in personnel while providing better records at an early date.

IBM CARDS FOR CCC SIGHT DRAFTS
(Commenced January 1956 - Completed September 1956)

To increase efficiency while reducing document filing and key punching of data in subsequent processing, the FISCAL DIVISION in Washington designed a multi-part punched card sight draft with prepunched serial numbers for issuance by ASC county offices.

Previously, a paper sight draft in three parts with preprinted serial numbers was prepared manually on typewriters in the county office. The drafts were forwarded via the federal reserve bank, to the related area commodity office where data were transcribed from the paid sight draft into a punched card and the draft document was filed manually.

Under the new method, a snapout punched card sight draft with preprinted and prepunched serial numbers replaces the paper sight draft. The card sight draft is manually prepared in the county office in the same manner as was the paper draft. Data are now key punched by the commodity office into the sight draft card and draft records are updated and documents are arranged for processing by machine.

The punched card sight draft was placed in use in early 1956 and has minimized errors in key punching the sight draft serial number, the primary file reference, and has made possible the final machine matching of the negotiated document with the accounting copy resulting in reduced costs in this application.

PREPARATION OF ACCEPTANCE WIRES AND CONTRACT ABSTRACTS UTILIZING IDP TECHNIQUES

(Commenced January 1956 - Completed December 1959)

To integrate the preparation of contract abstracts with the preparation of contract acceptance wires, the CINCINNATI COMMODITY OFFICE utilized an automatic typing machine to type repetitive data on the two forms.

The contracting procedure for negotiating contracts with vendors under the price support program for processed commodities provides for the preparation and issuance by the commodity office of a contract acceptance wire. Previously, the acceptance wire had been prepared on a typewriter and then transmitted over teletype lines in the conventional manner. The contract abstract form containing much of the data in the acceptance wire was subsequently prepared on a typewriter.

Under the revised system, the Cincinnati Office prepares the acceptance wires on a typewriter encoder-decoder that produces a by-product paper tape to be used for teletype transmission. The paper tape is also used to automatically insert data common to both the wire and the abstract into the contract abstract.

Manual transcription errors have been reduced and improved accuracy in teletype transmission of the acceptance wires has been realized as a result of these changes.

PUNCHING PAID CCC NEGOTIABLE INSTRUMENTS BY FEDERAL RESERVE BANKS

(Commenced January 1957 - Completed March 1958)

To apply integrated data processing techniques, the EVANSTON COMMODITY OFFICE developed a system for punching paid amounts into CCC negotiable instruments during the federal reserve bank (FRB) processing.

CCC uses punched card form negotiable drafts and certificates of interest for payments to producers, warehousemen and carriers under the agriculture price support programs. The FRB prepared adding machine tapes of these CCC negotiable instruments as part of their daily balancing operation. These cards were then delivered to the local commodity office. The amount paid was key punched into the cards by the commodity office to facilitate further processing.

By use of adding machines that are cable connected to key punch machines, the amount paid is punched into the card as a by-product of preparing the adding machine tape used in the FRB balancing operation. These cards are then processed by the commodity office with no additional key punching.

Agreements have been reached with the Chicago and Kansas City FRB's to use this system in cooperation with the Evanston and Kansas City Commodity Offices respectively. This has eliminated at least $2,000 per year in key punch costs in at least one commodity office with practically no increase in costs or operations in the FRB's. In addition, greater accuracy has resulted in the new system.

DEVELOPMENT OF A PROPOSED SYSTEM FOR PREPARING CONTRACTS AND LOADING ORDERS ON IDP EQUIPMENT

(Commenced January 1958 - Deferred)

To determine the feasibility of preparing certain source documents and capturing data in machinable form as a by-product of preparing contracts and loading orders, the DALLAS COMMODITY OFFICE studied equipment capable of producing typewritten copy and punched paper tape simultaneously.

It was proposed to prepare contracts with the aid of punched paper tape fed through an encoder-decoder typewriter. A by-product tape is created which is processed through the encoder-decoder typewriter in a second operation to produce the loading orders arising from the initial transaction. Both punched paper tapes would then be processed through a paper tape to card converter mechanically producing punched cards for introduction into the mechanized record keeping system.

Action was deferred on this project pending the results of another project involving the use of the New Orleans computer for maintenance of inland warehouse receipt records.

INTEGRATED DATA PROCESSING APPROACH

(Register vs Blocking Technique)
(Commenced July 1959 - Consolidated)

To further improve the present internal integrated data processing (IDP) system, the MINNEAPOLIS COMMODITY OFFICE initiated a study of the feasibility of using the register technique for recording vouchers as opposed to the blocking technique.

The National Inventory Management project contained a work area "Develop Application of IDP Approach to Input", for which Minneapolis was designated as lead office. On the basis of the early scheduled completion of the work area, the project was incorporated into the IDP work area.

USE OF SYNCHRO-TAPE TYPEWRITER FOR MECHANIZATION OF FORMS AND REQUISITION CONTROL

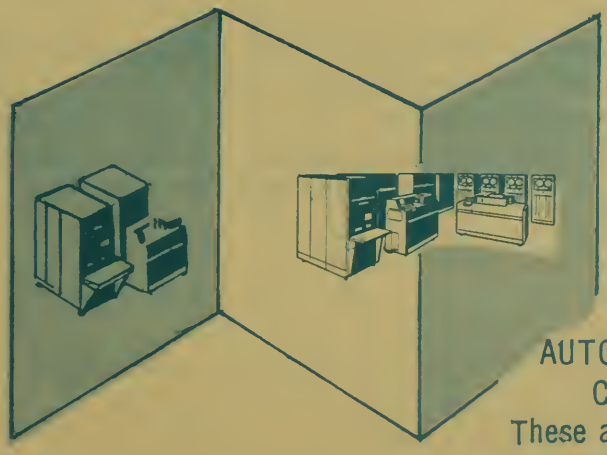
(Commenced January 1959 - Completed June 1960)

To mechanize work in connection with field requisitioning of program and administrative forms, publishing and updating current forms catalogue, and printing out weekly notices of forms changes, the ADMINISTRATIVE SERVICES DIVISION in Washington acquired the Synchro-Tape Typewriter with 8 level punched tape and edge punched cards.

Previously, requisitions were processed manually and forms catalogues were manually prepared and published periodically. Weekly forms changes notices had not previously been issued.

The new system uses the typewriter with tape and cards to process requisitions, publish the catalogue, and issue weekly notices of catalogue changes.

Edge punched cards and punched tape have been prepared to cover all forms, consignees, purchase orders, and stock inventory control. Additional applications include preparation of: identical correspondence to multiple addresses, multiple file labels, program handbook headings and identification, and a forms stock inventory control report.



IV A
AUTOMATIC DATA PROCESSING CONVERSION PROJECTS

These are automation projects wherein the objective is to convert from an existing mechanized data processing system utilizing electric accounting machines (EAM) and/ or electronic machines (EDP) to a system utilizing EDP machines of larger or newer types so as to obtain greater machine capacity and faster processing speeds.

USE OF IBM 705 IN SIGHT DRAFT AND CERTIFICATE RECONCILIATION
(Commenced January 1958 - Completed June 1958)

To better accomplish reconciliation of CCC Conservation Reserve and National Wool Act Sight Drafts and Acreage Reserve Certificates issued, the DALLAS COMMODITY OFFICE revised the system to take advantage of the IBM 705 in the New Orleans Data Processing Center (DPC) for faster, more efficient reconciliation. Punched cards, drafts and certificates received from the County Offices and the Federal Reserve Bank (FRB), were punched by the commodity office to include the variable data. These cards were then matched, balanced, and retired utilizing conventional electric accounting machine equipment. Card files were maintained and accounting controls and reports were generated. Certain of these reports were forwarded to County Offices. Seasonal workload was such that, during peak periods, service to the County Offices was delayed considerably.

With the new system, punched cards received from County Offices and the FRB are keypunched, balanced, and shipped to New Orleans weekly. The New Orleans DPC updates the master tape record, produces transaction and matching registers, exception listings, and control totals. Summary cards and computer output reports are then returned to the Dallas Commodity Office to complete accounting maintenance functions, filing and distribution of certain reports to the county office.

The system design has been completed and approved. It was installed in April 1958. Necessary handbook changes were issued and conversion to the new system was effected, June 1958. Peak volume no longer presents a problem of processing the data. Savings have been estimated at $20,000 per year.

USE OF IBM 705 FOR MAINTENANCE OF INLAND WAREHOUSE RECEIPT RECORD AND TRANSIT RIGHTS INVENTORY

(Commenced June 1958 - Unfinished)

To improve maintenance of inland warehouse receipt records and inventory of transit rights, the DALLAS COMMODITY OFFICE studied the feasibility of using the International Business Machines (IBM) Corporation Type 705 computer system in the New Orleans Data Processing Center (DPC) for this purpose.

Inland Warehouse Receipt Records: The system provides for the Kansas City DPC to make inventory cards available to Dallas on unredeemed warehouse receipts when forfeiture listings are forwarded to county offices. Dallas holds these in suspense until warehouse receipts are submitted by county offices. After receipt and updating, outstanding warehouse receipt cards are used to produce debit listings and other inventory recordation. The Kansas City DPC is notified to make current their loan forfeiture records. Analysis of stocks is performed on a limited scale using electric accounting machine (EAM) equipment in Dallas. Loading order invoices are prepared at the time warehouse receipts are listed on trust forms supporting the loading order. Periodic invoices are prepared on EAM equipment.

It is proposed that inventory cards be sent directly from Kansas City to New Orleans where magnetic tape records will be created from them. Outstanding warehouse receipt records would be transmitted to both Kansas City and New Orleans. They would be maintained as suspense items on tape and the remaining warehouse receipts would be taken into inventory by using the loan forfeiture tape to update master warehouse receipt tapes. A weekly analysis of stocks report which is not now feasible to prepare would be provided. Weekly summaries of commodities by warehouse would be listed replacing present debit listings. The loading order issuance would be the record for the New Orleans DPC to update inventories and the basis for preparing the loading order invoice. This would eliminate re-running of carry-over loading order invoices. Periodic invoices would be computed more rapidly on the IBM 705.

Transit Rights Inventory: Previously, transit inventory was maintained on punched cards. All accounting records were maintained manually. Frequently, more than one punched card was required for each freight bill. Recordation had to be manually checked. Inter-relating inventory and transit records was a manual operation.

The inter-relationship of transit rights to warehouse receipt records necessitates the placing of this inventory on tape also. The necessary cross-referencing of the two operations would result in the slower of the two operations governing the speed of both operations.

These systems will result in faster preparation of periodic invoices, more efficient calculation and payment of loading order invoices, and more complete up-to-date analyses of available stocks. A considerable number of transit settlements could be eliminated by such synchronization. All of these will provide better service to the public.

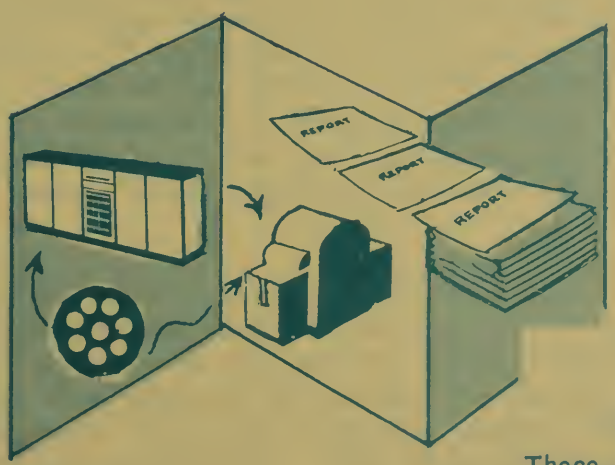
Placing of these records on magnetic tape also makes feasible another project discussed elsewhere, "Automatic Selection of Warehouse Receipts." Cost benefits are estimated to be $30,000 per year for the combined projects.

CONVERSION OF WAREHOUSE RECEIPT RECORDS TO EDP
(Commenced April 1959 - Unfinished)

To establish an integrated system for the acquisition of grain warehouse receipts into CCC inventory from the price support program and to provide more rapid and economical recordation and processing of data to produce required output, the EVANSTON and KANSAS CITY COMMODITY OFFICES have initiated projects to convert warehouse receipt records from conventional to existing electronic data processing equipment.

Systems used in other offices have been reviewed and an EDP systems concept has been developed embodying: validity checks of data entering the system; operating flexibility; mechanical preparation of the trust, trust invoice, and shipping instructions; immediate preparation of priority trusts; merchandising data to fulfill management needs; mechanical preparation of periodic storage invoices; preparation of storage accrual data; updating master records periodically and a controlled correction system for validation of erroneous data.

The completion of these projects is expected to result in serving management needs on a more current basis and with greater efficiency. In-store sales, periodic invoices, daily storage receiving and loadout charges, policing reports, loading order issuances and accounting reports should be processed faster and more economically.



IV B
AUTOMATIC DATA PROCESSING SYSTEMS

These are automation projects wherein a data processing system is developed utilizing automatic data processing techniques to meet management needs without regard to types of equipment.

PRICE SUPPORT LOAN AND PURCHASE AGREEMENT PROGRAM
(Commenced January 1956 - Unfinished)

To provide maximum program flexibility, improved service to the public, reduced operating costs, and continued sound accounting practices, the KANSAS CITY COMMODITY OFFICE, in collaboration with the DALLAS, EVANSTON, MINNEAPOLIS and PORTLAND COMMODITY OFFICES, developed a system for processing price support loans and purchase agreements through the use of electronic data processing (EDP) equipment.

The price support loan and purchase agreement program had been decentralized in the ASC county offices. The transfer of the disbursement and repayment functions to the county office imposed many burdensome "bookkeeping" chores on county offices which tended to detract from the purpose of decentralization. A multiplicity of forms, transmittals, accounts, schedules, and records had been created. The problem was aggravated by the necessity to control and account for loan documents held in custody at literally thousands of locations by lending agencies.

To correct this condition a plan was developed and put into operation which provided for continued decentralized management but with centralized record keeping. The county offices maintain all original active producer notes and related loan documents between disbursement and liquidation. The producer is paid by the county office by sight draft or is issued a CCC certificate which is payable at a designated lending agency and which is interest bearing to the lending agency. This system permits county office control of loan documents at all times.

In addition, county offices furnish basic loan and purchase agreement data to the commodity offices. These data are channelled through the related area commodity office to Data Processing Centers in Kansas City or Evanston where they are processed through electronic data processing systems. This eliminated much duplication of records and multiple preparation of schedules in county offices and insures greater accuracy of computation and tabulation in the development of program data.

The initial system installed in the Kansas City Commodity Office was the Univac I Computer. After experience with this machine and development of sophisticated programming techniques, it became necessary, due to expanded volume, to contract for outside computer time in order that all price support operations could be processed rapidly. Upon study, it was determined that the Univac II could process all current and prospective applications on a conversion basis alone at a savings in both cost and time. Consequently, the Univac II was placed in operation in the Kansas City Office during 1959. Complete system redesign and reprogramming to take advantage of the expanded features of the new equipments is being continued.

The new system was inaugurated in the Kansas City Commodity Office area in Fiscal Year 1958. It was extended to a nationwide basis in Fiscal Year 1959. It is estimated that during Fiscal Year 1959 the new system resulted in a savings to the agency in excess of $4,000,000.

CCC COTTON OPERATIONS
(Commenced January 1956 - Unfinished)

To improve service, reduce costs, improve accounting and operating reports, and provide more accurate data, the NEW ORLEANS COMMODITY OFFICE installed an electronic data processing system to process most activities associated with the cotton program. Redesign of the system to best utilize capabilities is a continuing program in the office.

CCC cotton operations are centralized in the New Orleans Commodity Office. The practice of accounting for cotton on a bale-by-bale basis results in millions of records. The office had used electric accounting machines (EAM) to process this large volume. This was one of the largest EAM installations in the country.

The development of electronic data processing equipment afforded the office an opportunity to further develop and improve an already sophisticated mechanical processing system. As the result of a feasibility study, an International Business Machines (IBM) Model 705-II electronic data processing system was installed in the office in December 1957. In 1958 as program volumes increased, cotton applications made greater demands on computer processing time. With the manufacturers announcement of the IBM Model 705-III it was recognized that the previous computer system could be given greater capacity and possess a number of additional features which would assure both greater accuracy and faster processing time. Upon completion of the study, the system was converted and the Model III was installed in the office in time to make possible a smooth processing of the 1959 cotton price support program which was the largest in history.

Since initial installation of the equipment, service to the public has improved and significant savings in costs of program operations have been effected. For example, the acquisition, cataloguing, and sale of 1958 crop cotton were processed faster than at any time in the 18-year history of the office with an estimated savings of $3,500,000 in program costs. Further, 6.1 million equity distribution checks were issued to producers during May and June 1959 and over 1.5 million bales of cotton were reconcentrated between August and October 1959 while the 1958 crop cotton was being

acquired, catalogued and offered for sale. This volume of activity would not have been possible in a comparable period of time under the previous system.

Costs for equipment rentals and personnel services, however, were under-estimated by $500,000 per annum, for the first few years during amortization of system development and installation costs.

NATIONAL INVENTORY MANAGEMENT PROJECT
(Commenced March 1959 - Unfinished)

To construct an improved inventory management system which will be highly responsive to management needs, a national systems study was initiated as a joint effort of ALL COMMODITY OFFICES with national coordination and direction by Washington.

In view of the fact that cotton inventory management processes are already highly mechanized, the effort to date has concentrated on grain which constitutes the large majority of total CCC inventory. The day to day management of grain inventory is the responsibility of commodity offices located at Dallas, Texas; Evanston, Illinois; Kansas City, Missouri; Minneapolis, Minnesota, and Portland, Oregon.

The present grain inventory data processing system emphasizes the use of electric accounting machine equipment with related punch card processes. National reporting requirements had been established to produce certain accounting and operating reports which were feasible with EAM equipment. A small number of projects had also been approved to determine the feasibility of using ADP equipment in selected grain inventory management processes.

The initial approach involved the formation of a "National Inventory Management Work Group" which included representation from all interested offices. This group explored various alternative approaches to systems development and selected a basic concept of priority areas where improvements in the system might be developed. This approach produced much valuable data through research and development efforts. It also produced tangible benefits. For example: thousands of dollars can be saved each year in freight payments by policing a requirement that warehousemen abide by a coded instruction on a bill of lading; an estimated annual savings of $23,000 is related by another office resulting from changes in procedures brought about by the project; and additional savings are related to commitment documents, proofs of payment and codes pertaining to schedules of collections. The National Inventory Management Work Group has served the basic purpose for which it was established.

This approach has been recently replaced by a new and accelerated effort whereby each Commodity Office will produce improved methods and procedures, within the framework of a nationally approved and coordinated work plan. The Commodity Office Directors are participating actively in the current effort thereby affording the opportunity for policy as well as procedural improvements during all stages of systems analysis.

CONSOLIDATION OF WAREHOUSE RECEIPTS
(Commenced December, 1955 - Consolidated)

To develop a system for grouping warehouse receipts, the DALLAS COMMODITY OFFICE studied factors by which the receipts might be grouped, including grade and class. The object was to arrange the receipts in large groups thus negating the importance of the individual receipt as an entity.

Previously, warehouse receipts were maintained on an individual basis. Payments of storage charges and selection of receipts for surrender during dispositions were made manually.

The proposed system would mechanize all handling of warehouse receipts and permit the maintenance and issuance of receipts grouped according to common factors. The resultant reduction in volume of paper to be handled would permit mechanical blending of grain. Mechanical blends would be as good or better than those achieved manually. Warehouse charges and storage payments would be relatively simple to calculate from the consolidated warehouse receipts.

The project was submitted to Washington for approval. The emergence of the Dallas local Inventory Maintenance Project led to inclusion of this project with the Dallas Inventory Maintenance Project.

LOADING ORDER SETTLEMENTS
(Commenced January 1956 - Unfinished)

To expedite the calculation and preparation of loading order settlements, the EVANSTON COMMODITY OFFICE developed a settlement system which employs automatic data processing equipment.

In the Evanston Office, a new concept was developed which involved settlement on a car-by-car basis rather than a loading order basis. This permits settlement to be completed as documentation for each car is received. Under the previous system, documentation for the entire loading order was necessary before the settlement for that loading order was started. Adoption of this method materially reduced backlogs and reduced the interval of time required for processing the documents.

In addition, workload was reduced in the issuance of warehouse receipt loading orders. One form was designed to replace three separate forms, the loading order, trust order and invoice. The invoice portion of the new form is precomputed to further expedite loading order operations. Other improvements in the system were initiated to streamline operations and utilize the electronic data processing system in the office. It has been estimated that the office has saved about $30,000 per year since installing the new system.

This application is presently being studied for conversion of card processes to magnetic tape processes utilizing available equipment.

INVENTORY MAINTENANCE
(Commenced March 1956 - Consolidated)

To develop an improved inventory management system, within the commodity office's geographical area, capable of maintaining inventory records on a current basis while providing for prompt and accurate recordation of acquisitions and dispositions and supplying current availability information, the DALLAS and MINNEAPOLIS COMMODITY OFFICES each designed an automated data processing system.

At the time that this project was initiated, the inventory management system in these offices primarily utilized punched card equipment for maintaining accounting data. Financial controls had been established to safeguard accountability for the substantial assets of the Corporation. Operating controls and functions were provided as a by-product. Operating and management data had been obtained largely from manual records and personal contacts. The entries required to satisfy the accounting controls applicable to acquisition and disposition of inventories were obtained from manually prepared worksheets and were mechanically compared to the financial controls. Differences were manually researched and resolved. These manual operations were gradually being mechanized.

DALLAS:
During the conduct of the study, the Dallas office developed a new concept which represented an almost complete reversal of past operating principles of machine accounting. The existing system had been designed for accounting control. Operating information was a by-product. Under the new concept, the operating information was to be developed first because it occurred first. Accounting records would be produced as a by-product without sacrificing the integrity of the accounts.

The system would provide an "automatic office." This means that the machine system would be used to provide all reasonably anticipated information to management at its immediate call; it would screen data in order to identify that which needed action and continue to process to conclusion that which was normal; it would accumulate data and once accumulated process it; and it would prevent the occurrence of an undesired action or, if that was not possible, call management's attention to such occurrence.

MINNEAPOLIS:
The Minneapolis office approach was to rely on existing management needs and concepts. As a result, the office identified several areas of inventory management operations which were adaptable to electronic data processing techniques. These included periodic payments of warehouse storage charges, loading order issuance and settlement, deliveries, freight payments, sales and transfers out. It was recognized also, that such additional operations as accounts receivable and payable, bin-site facility accounting, administrative activities and warehouse approvals could be put on a system with an expected additional savings.

These studies concluded in recognition that a large scale computer system was necessary to implement the Dallas system and at least a medium scale computer was necessary to implement the Minneapolis system. More important than this was the recognition that the two studies had produced entirely different systems. This pointed out the need for a national system within which the commodity offices would be permitted to develop the specific details related to their respective inventory operations. The apparent need for a national effort evoked a decision not to install the radically different systems. It was decided to utilize the ideas, concepts and methods developed in the establishment of a national inventory project which would first address itself to the grain inventory.

TERMINAL TRANSIT LOSSES
(Commenced January 1957 - Completed September 1957)

To make claims determinations and to file the claims within prescribed periods for terminal transit losses, the EVANSTON COMMODITY OFFICE proposed to mechanize billings against carriers on their International Business Machines (IBM) type 650 computer.

Previously, the price computed for establishing a basis for claims, was based upon destination point price less the balance transit rate, if any. Cars were grouped by loading order. Claims would not be established until all weight, inspection, protein certificates and freight bills are present for the entire loading order.

The office proposes to establish normal markets for each commodity in each terminal elevator. The price used will be based on the date of shipment at the normal market with adjustments for premiums and discounts and adjustments for the freight rate from the point of origin to the normal market. Freight bills for each car would be analyzed and claims would be established individually for each short weight car. A claim form has been developed for serially listing claims on an IBM type 407 electric accounting machine.

Due to a change in agency policy, the volume of work in connection with this operation was materially reduced. Consequently, implementation of this project was suspended.

WOOL AND MOHAIR PAYMENT PROGRAM
(Commenced January 1957 - Completed March 1959)

To determine whether recording and reporting processes within the Wool and Mohair Payment Program could be more efficiently handled by automatic data processing techniques, the KANSAS CITY COMMODITY OFFICE initiated a systems study of the programs.

The county office forwards to the AMS State Offices data abstracted from producers' applications for payments. After an editing control review by the State Office, the abstracted data are forwarded to AMS in Washington, D. C. for utilization in compiling and publishing the monthly market prices for these commodities.

The study was concerned with the machine audit of transactions and the AMS monthly data needs regarding sales made by individual producers. Since these needs have not changed and current reporting systems are adequate, no basic system changes were made.

The Wool Program study has produced substantial savings in the present systems through the redesign of the producers' application form so that all signatures and data are on one side with certifications on the other.

Previously data and signatures had appeared on both sides of the form. The change has made possible the printing of this form in snapout sets and the subsequent processing of data in a faster and simpler manner.

PERSONNEL, PAYROLL AND BUDGET REPORTS AND RECORDS

(Commenced January 1958 - Completed December 1958)

To determine if it would be advantageous to more fully integrate the personnel, payroll and budget reports and records, a joint systems study was conducted by the PERSONNEL MANAGEMENT DIVISION, the FISCAL DIVISION and the BUDGET DIVISION.

Under the present system, certain basic documents such as the SF-52 "Request for Personnel Action" and SF-50 "Notification of Personnel Action" generate data common to the personnel, payroll and budget records. CSS has approximately 7,100 to 8,000 employees on the payroll. The payroll records had been maintained on bookkeeping machines while personnel and budget records had been maintained manually.

The study embraced a review of the present system and management's present and additional needs. Visits were made to local installations utilizing electronic data processing equipment (EDP) to process these records. A concept of the total integrated system was developed to accomplish the record keeping and reporting objectives.

The present system was costed and compared to estimated costs of the proposed system. It was concluded that the present system had achieved a high degree of efficiency at a low administrative cost in the timely production of payrolls, annual withholding statements, personnel actions, etc. The proposed system could not materially improve on the efficiency nor reduce the overall costs of the present system at the time of the study. Additional management needs that might have been produced by the revised system were not material.

CONSERVATION RESERVE PROGRAM REPORTI NG
(Commenced July 1958 - Completed June 1959)

To relieve State and County ASC Office personnel of burdensome manual record keeping functions, the SOIL BANK DIVISION initiated a plan to utilize electric accounting machines in the NEW ORLEANS COMMODITY OFFICE to handle voluminous contract record keeping functions required by the Conservation Reserve Program.

The Conservation Reserve Program presented a complex record keeping problem for county office personnel. The combination of variable rates and termination dates for different parcels of land on a particular farm and the numerous practices available to the farmer complicated manual record keeping procedures. A system was developed whereby the county offices submit a copy of the Conservation Reserve contract to the New Orleans Office. Information is then recorded on punched cards and processed through electric accounting machines. Reports of activity are submitted by the New Orleans Office to ASC State and County Offices and to the Soil Bank Division in Washington.

In addition to relieving state and county offices of a considerable amount of record keeping and reporting, the new system has resulted in more timely information presented in more usable form.

SURVEY OF NEW DATA TRANSMISSION METHODS
(Commenced October 1958 - Unfinished)

To study existing methods, facilities and equipment presently available for use in transmitting data from one point to another, the FISCAL DIVISION in Washington initiated a fact finding survey which was subsequently transferred to the DALLAS COMMODITY OFFICE. The study embraces costs, facilities and equipment, and delivery time.

Reviews and analyses have been made of the Kineplex data transmission system, IBM Data Transceiver system, Dataphone system, Friden Teledata, and Burroughs Electrographic. This study is of a continuous nature to enable the agency to keep abreast of the latest developments in data transmission and their possible applications within CSS. Information developed thus far from this project has contributed materially to the consideration of data transmission applicability and desirability in other mechanization projects.

AUTOMATIC SELECTION OF WAREHOUSE RECEIPTS
(Commenced April 1959 - Unfinished)

To automatically select warehouse receipts for blending grain, the DALLAS COMMODITY OFFICE applied electronic data processing (EDP) equipment to linear programming techniques.

Previously, grain was "desk blended", that is, warehouse receipts were selected manually by a clerk while filling loading orders. All necessary computations were performed manually with adding machines or desk calculators. Since it was quicker and easier to fill a loading order with warehouse receipts for large lots of grain, receipts for smaller lots tended to be shunted aside.

To overcome these problems and to obtain blends most advantageous to CSS, linear programming techniques have been applied to the problem with the aid of a computer. One such method, the Upper Bound, was selected as the most feasible for considering simultaneously all receipts associated with one warehouse, and then selecting those receipts for surrender that represent the least value to the agency while fulfilling agency commitments for quality. Using this method, the optimum blend of receipts may be selected from as many as 30,000 receipts in less than five minutes.

Upon completion of the blending routines, they were integrated with other projects being placed on EDP equipment to form a total system. The success of the blending project has opened new avenues of approach to solving other problems of the agency with the aid of linear programming techniques.

Cost benefits based upon the results of initial blends completed indicate an average value to the agency in excess of two-tenths of a cent per bushel blended.

DATA PROCESSING IN THE PERFORMANCE DIVISION
(Commenced August 1959 - Completed July 1960)

To determine if automatic data processing equipment would improve rectification for tilt and swing of aerial photographs and aid in the processing of certain paperwork, the PERFORMANCE DIVISION has been studying work processes in its Eastern Area Laboratory and equipment suppliers proposals for systems and equipment.

Both photographic rectification and the paperwork processing are currently done manually. At the beginning of the study, rectification depended in many instances on making a number of calculations to determine the tilt and swing of the airplane taking the photographs. The paperwork processes included a detailed cost accounting system, the maintenance of close inventory control, and the handling of sales orders. Each of these was considered as a part of the study as was control over work in process.

The study did not result in the acquisition of equipment but it did generate changed procedures that have more than offset the cost of the study.

Changes in rectification procedures alone have virtually eliminated the need for any calculation. Instead a calibrated, transparent grid has been devised which when laid over a photograph indicates needed rectification by reference to a scale included on the grid. Rectification was thereby reduced from twelve to fifteen minutes per photograph to about three minutes per photograph and the chances for human error have been lessened.